

Quick operation manual of DTSU666-□series and DSSU666-□series

Digital Three-Phase Energy Meter

Thank you for using the products of Zhejiang CHINT Instrument & Meter Co., Ltd. In order to have a safe and correct use of the instrument, please read this manual carefully and make sure to pay attention to the following points in use:

- **This instrument must be installed and maintained by the qualified professionals;**
- **The input signals and auxiliary power supply must be cut off before wiring of the instrument;**
- **Make sure every part of the instrument without voltage by continuously using appropriate voltage detection device;**

The following conditions will lead to the damage or abnormal operation of the device:

- **Incorrect ratio setting of the instrument;**
- **Out of range of auxiliary power supply、 voltage、 current、 frequency;**
- **Incorrect input polarity of current or voltage;**
- **The terminals are not connected according to the requirements;**

1. Technical parameters

Table 1

| Technical parameters | | | Index | | | |
|---------------------------------|-------------------------------|--------------------|---|------------------------------|------------------------|--|
| Input signal | Measuring network | | 3 phase 3 wire(DSSU666□series) 3 phase 4 wire(DTSU666□series) | | | |
| | Voltage | Rated value | 3 phase 3 wire | AC 3×380V; AC 3×400V | | |
| | | | 3 phase 4 wire | AC 3×220/380V; AC 3×230/400V | | |
| | | Operating voltage | 0.7Un—1.2Un | | | |
| | | Consumption | ≤8VA/1W(per phase) | | | |
| | | Resistance | > 500kΩ | | | |
| | Current | Rated value | 3 phase 3 wire | AC 5(80)A | | |
| | | | 3 phase 4 wire | AC 1.5(6)A | | |
| | | Consumption | ≤1VA(per phase) | | | |
| | | Resistance | <20mΩ(per phase) | | | |
| Frequency | Input range | 45Hz~65Hz | | | | |
| Output | Display | | LCD display | | | |
| | DSSU666□and DTSU666□series | Active energy | Class1 | resolving power 0.01kWh | | |
| | | Reactive energy | Class 2 | resolving power 0.01kvarh | | |
| | | Active energy | Class 0.5S | resolving power 0.01kWh | | |
| | | Reactive energy | Class 2 | resolving power 0.01kvarh | | |
| | Energy | Energy measurement | forward、 reverse active energy, four-quadrant reactive energy. | | | |
| | | Pulse constant | AC 3×380V; AC 3×400V | AC 1.5(6)A | 6400imp/kWh(imp/kvarh) | |
| AC 3×380V; AC 3×400V | | | AC 5(80)A | 400imp/kWh(imp/kvarh) | | |
| AC 3×220/380V; AC 3×230/400V | AC 1.5(6)A | | 6400imp/kWh(imp/kvarh) | | | |

| | | | | | |
|--|--------------------|---------------------|---|--------------|-----------------------|
| | | | AC 3×220/380V; AC 3×230/400V | AC 5(80)A | 400imp/kWh(imp/kvarh) |
| | | Pulse signal output | Supply active、reactive energy optical signal and optocoupler collector open-circuit electrical signal impulse output, pulse length:80±16ms。 | | |
| | Auxiliary function | Protocol | Support MODBUS-RTU or DL / T645-2007 communication Consultation (switchtable), Baud rate support 2400bps, 4800bps, 9600bp. | | |
| Note 1: the other performance index, indoor table reference IEC 62053 - 21 requirements. | | | | | |

2. Wiring instructions:

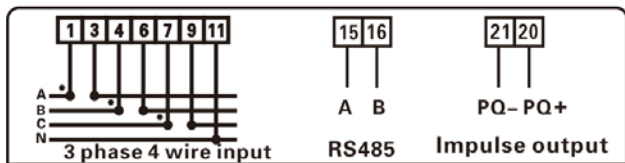


Figure 1 DTSU666-□series

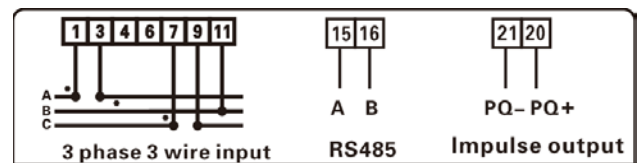


Figure 2 DSSU666-□series

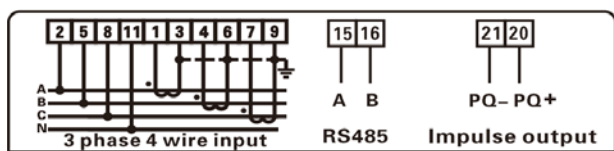


Figure 3 DTSU666-□series

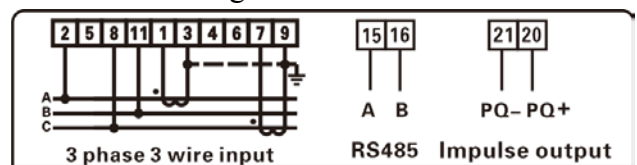


Figure 4 DSSU666-□series

Current signal wire

- 1-----L1*(phase L1 current input line)
- 4-----L2*(phase L2 current input line)
- 7-----L3*(phase L3 current input line)
- 3-----L1(phase L1 current output line)
- 6-----L2(phase L2 current output line)
- 9-----L3(phase L3 current output line)

Voltage signal wire

- 2-----L1(phase L1 voltage line)
- 8-----L3(phase L3 voltage line)
- 5-----L2(phase L2 voltage line)
- 11-----UN(Neutral line)




RS485 communication line

- 15-----A (RS485-A)
- 16-----B (RS485-B)

Energy pulse output line

- 20-----active ,reactive energy pulse +
- 21----- Energy pulse –

3. Instructions of programming parameters

Instruction of keys: “” means “confirm”, “” means “exit”, “” means “add”. Input the password(assumed to be 701),enter the submenu item of “system settings”(when the system is set to third rows of digital display, the first row of hidden):

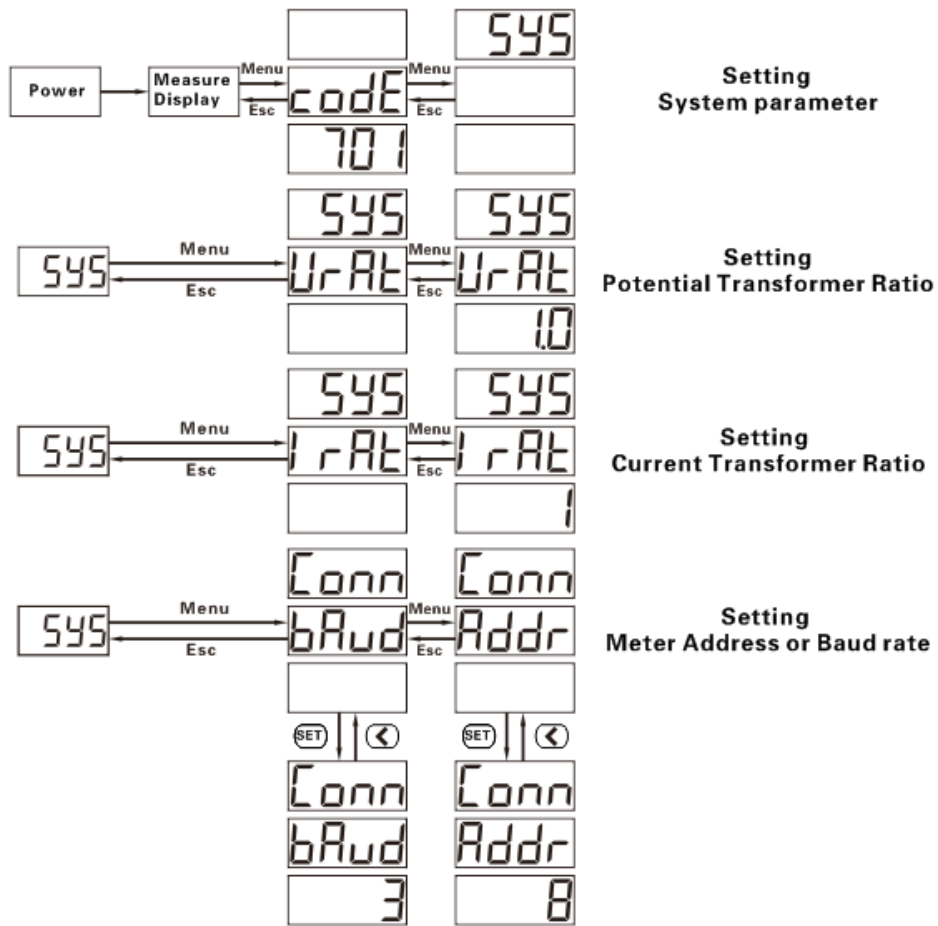


Figure 5 the settings of the common parameters

4. Installation size

Table2

| Model | Shell size (width×length×depth) | DIN rail for mounting |
|------------------------------------|---------------------------------|-----------------------|
| DTSU666-□series DSSU666-□series | 126mmx89mmx76mm | 35mm |

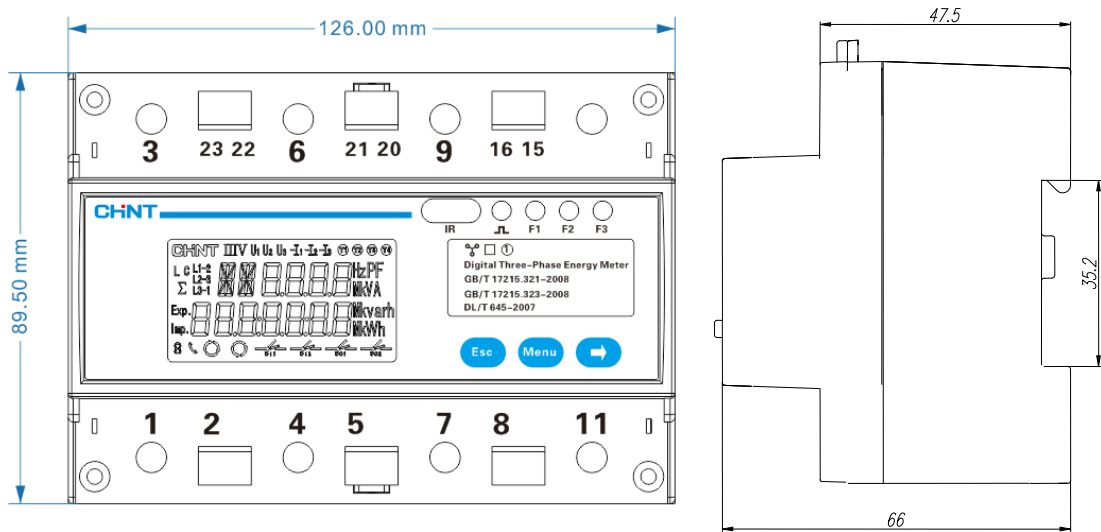


Figure 6 outside view

5. communication

Factory setting: DL/T 645-2007 protocol, Parity(E.1), Baud Rate(9600bps), Meter Address see table.

The RS485 communication supports DLT 645-2007 protocol or ModBus_RTU protocol, DLT 645-2007 supports read Meter Address, (current) total import active energy, (current) export active energy, (current)quadrants I reactive energy, (current)quadrants II reactive energy, (current)quadrants III reactive energy, (current)quadrants IV reactive energy, voltage, current, active power, reactive power, power factor, frequency.

ModBus_RTU protocol, Parity(n.2), Baud Rate(9600bps), Meter Address see table.

Table 3 ModBus Register Address

| Parameter address | Parameter code | Instruction of the parameters | Type of data | Length of data Word | Read&write attributes |
|---|----------------|--|--------------|---------------------|-----------------------|
| Keyboard parameters (detailed function see the instruction of the programming parameters, the actual value of the parameter with(*)= communication parameter value × 0.1) | | | | | |
| 0000H | REV. | version | signed int | 1 | R/W |
| 0001H | UCode | Programming password code | signed int | 1 | R/W |
| 0002H | ClrE | Electric energy zero clearing CLr.E(1:zero clearing) | signed int | 1 | R/W |
| 0003H | net | Selecting of the connection mode net(0:3P4W,13P3W) | signed int | 1 | R/W |
| 0004H | RESERVED | reserved | signed int | 1 | R/W |
| 0005H | RESERVED | reserved | signed int | 1 | R/W |
| 0006H | IrAt | Current Transformer Ratio | signed int | 1 | R/W |
| 0007H | UrAt | Potential Transformer Ratio(*) | signed int | 1 | R/W |
| 000BH | Meter type | Meter type | signed int | 1 | R |
| 002CH | Protocol | Protocol changing-over | signed int | 1 | R/W |
| 002DH | Addr | Communication address Addr | signed int | 1 | R/W |
| 002EH | bAud | Communication baud rate bAud | signed int | 1 | R/W |
| 002FH | Second | Second | signed int | 1 | R/W |
| 0030H | Minute | Minute | signed int | 1 | R/W |
| 0031H | Hour | Hour | signed int | 1 | R/W |
| 0032H | Day | Day | signed int | 1 | R/W |
| 0033H | Month | Month | signed int | 1 | R/W |
| 0034H | Year | Year | signed int | 1 | R/W |

| Electric quantity of the secondary side | | | | | | |
|---|-------|---|----------|----------------|---|---|
| 2000H | Uab | Line -line voltage, the unit is V(It is invalid for 3 phase 4 wire) | Floating | Inverse(AB CD) | 2 | R |
| 2002H | Ubc | | Floating | Inverse(AB CD) | 2 | R |
| 2004H | Uca | | Floating | Inverse(AB CD) | 2 | R |
| 2006H | Ua | Phase-phase voltage, the unit is V(It is invalid for 3 phase 3 wire) | Floating | Inverse(AB CD) | 2 | R |
| 2008H | Ub | | Floating | Inverse(AB CD) | 2 | R |
| 200AH | Uc | | Floating | Inverse(AB CD) | 2 | R |
| 200CH | Ia | The data of three phase current,the unit is A (Ib is invalid when three phase three wire) | Floating | Inverse(AB CD) | 2 | R |
| 200EH | Ib | | Floating | Inverse(AB CD) | 2 | R |
| 2010H | Ic | | Floating | Inverse(AB CD) | 2 | R |
| 2012H | Pt | Conjunction active power, the unit is W | Floating | Inverse(AB CD) | 2 | R |
| 2014H | Pa | A phase active power, the unit is W | Floating | Inverse(AB CD) | 2 | R |
| 2016H | Pb | B phase active power, the unit is W (invalid when three phase three wire) | Floating | Inverse(AB CD) | 2 | R |
| 2018H | Pc | C phase active power, the unit is W | Floating | Inverse(AB CD) | 2 | R |
| 201AH | Qt | Conjunction reactive power, the unit is var | Floating | Inverse(AB CD) | 2 | R |
| 201CH | Qa | A phase reactive power, the unit is var | Floating | Inverse(AB CD) | 2 | R |
| 201EH | Qb | B phase reactive power, the unit is var (invalid when three phase three wire) | Floating | Inverse(AB CD) | 2 | R |
| 2020H | Qc | C phase reactive power, the unit is var | Floating | Inverse(AB CD) | 2 | R |
| 202AH | PFt | Conjunction power factor | Floating | Inverse(AB CD) | 2 | R |
| 202CH | PFa | A phase power factor (invalid when three phase three wire) | Floating | Inverse(AB CD) | 2 | R |
| 202EH | PFb | B phase power factor (invalid when three phase three wire) | Floating | Inverse(AB CD) | 2 | R |
| 2030H | PFc | C phase power factor (invalid when three phase three wire) | Floating | Inverse(AB CD) | 2 | R |
| 2044H | Freq | Frequency | Floating | Inverse(AB CD) | 2 | R |
| 2050H | DmPt | Total active power demand | Floating | Inverse(AB CD) | 2 | R |
| Electrical data of the secondary side | | | | | | |
| 401EH | ImpEp | (current)positive active | Floating | Inverse(AB CD) | 2 | R |

| | | | | | | |
|-------|----------|--|----------|----------------|---|---|
| | | total energy | | | | |
| 4020H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4022H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4024H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4026H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4028H | ExpEp | (current)negative active total energy | Floating | Inverse(AB CD) | 2 | R |
| 402AH | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 402CH | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 402EH | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4030H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4032H | Q1Eq | (current) quadrant I reactive total energy | Floating | Inverse(AB CD) | 2 | R |
| 4034H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4036H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4038H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 403AH | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 403CH | Q2Eq | (current) quadrant II reactive total energy | Floating | Inverse(AB CD) | 2 | R |
| 403EH | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4040H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4042H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4044H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4046H | Q3Eq | (current) quadrant III reactive total energy | Floating | Inverse(AB CD) | 2 | R |
| 4048H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 404AH | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 404CH | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 404EH | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4050H | Q4Eq | (current) quadrant IV reactive total energy | Floating | Inverse(AB CD) | 2 | R |
| 4052H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4054H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4056H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |
| 4058H | RESERVED | reserved | Floating | Inverse(AB CD) | 2 | R |

All the electric quantity data read by the communication is quadratic numerical, the rate is excluded, complement numbers are the representation of negative numbers. Following is the detailed conversion method.

Table 1

| Parameter name | Conversion formula | Unit | Parameter item |
|----------------|---|------|----------------------|
| Voltage | $U = URMSx(x=a, b, c) \times (UrAt \times 0.1) \times 0.1$ | V | Ua,Ub,Uc,Uab,Ubc,Uca |
| current | $I = IRMSx(x=a, b, c) \times IrAt \times 0.001$ | A | Ia,Ib,Ic |
| Active power | $P = Px(x=a, b, c) \times (UrAt \times 0.1) \times IrAt \times 0.1$ | W | Pt,Pa,Pb,Pc |

| | | | |
|----------------|--|--------------|---|
| Reactive power | $Q = Q_x(x=a, b, c) \times (U_{rAt} \times 0.1) \times I_{rAt} \times 0.1$ | var | Pt, Qa, Qb, Qc |
| Power factor | $PF = PF_x(x=a, b, c, t) \times 0.001$ | | PFa, PFb, PFc, PFt |
| Frequency | $F = Freq \times 0.01$ | Hz | F |
| Energy | $E_p = E \times U_{rAt} \times I_{rAt}$ | kWh kvarh | ImpEp, ExpEp, Q1Eq, Q2Eq, Q3Eq, Q4Eq |

Note: When Potential Transformer(Pt) is 1, The value of UrAt is 10.

Manufacturer: Zhejiang CHINT Instrument&Meter Co.,Ltd.

Address: Bridge Industrial Zone, 325603 Wenzhou, Zhejiang, China

P.C : 325603

Technical Support Hotline: 0571-56977777-7659 86-15858113737

Quality Complaints: 0577-62919999 8008577777

Counterfeit Complaints Hotline: 0577-62789987

Website: <http://www.chint.com>

Email: ztyb@chint.com

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